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THESIS FOR DEGREE OF DOCTOR OF PUBLIC HEALTH

# PUBLIC HEALTH IN NOVA SCOTIA.

BY

JAMES ANGUS DOULL

1921.

Public Health in Nova Scotia. By C. A. Boull.

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# PUBLIC HEALTH IN NOVA SCOTIA.

"Education, in the full sense of the word, is the one far reaching true reformer, for which in all the domains the sufferers have to work and hope; not the mere elementary school-business of reading and writing and arithmetic, nor even merely those bits of learning with some super-addition of a bread-winning technical proficiency; but the education which completes for self-help and for social duty, by including wisdom and goodness among its objects; the education which teaches standards of moral right and wrong, gives height to character and aim, acts orthopaedically on the twisted mind, and applies its own hygienic discipline to the shaking-palsy of purposeless life." Sir John Simon.

## I. INTRODUCTION.

A comparatively homogeneous population, living in a temperate climate, with little poverty, should prove an ideal subject on which to test the effects of a progressive policy of public health education.

Nova Scotia, one of the oldest Canadian provinces, presents such an opportunity. Its population in 1901 numbered 459574, an increase of 19,000 over 1881. The estimate of 1919 was 514484 of which forty-one per cent resided in the

rural sections. Many of these incorporated towns are very small and if only places of 10,000 and over are classed as urban 78 per cent of the population might be called rural. The inhabitants are principally of English, Scotch and Irish descent but there are several districts in which French is still spoken, and one county is populated by the descendants of emigrants from the banks of the Rhine.

The principal industries are coal-mining, the manufacture of steel products, lumbering, fishing and farming. Over six million tons of soft coal are mined annually with a value in 1919 of over fifty million dollars. Fishermen and their families probably number one-sixth of the population.

The total land area of the province is about 21,000 square miles.

The climate is probably the most temperate of all the provinces of Canada. The average summer temperature being 46.5° F.and winter 25° F. Zero weather, however, is common in January and February and colder weather even to five or ten degrees below zero is not uncommon. The average rainfall is 38.1 inches and snowfall 75.4 inches.

Common schools and education are under the control of the provinces in Canada under the British North America Act. The school system, in Nova Scotia, is counted a good one. Further reference to the schools of the province is made below. There is a compulsory attendance act which is not strictly enforced in all sections. There are several institutions of

higher education in the province. Kings College under the control of the Church of England is the oldest. Saint Francis Xavier's College at Antigonish is Roman Catholic. Acadia University, Baptist, and Dalhousie University, which is non-denominational. The last is situated at Halifax, has schools of Arts, Science, Law, Medicine and Dentistry, and an attendance of approximately eight hundred. The Medical School recently received a gift of one million dollars from the Rockefeller Foundation and the Carnegie funds.

The Capital of the province is Halifax founded in 1749 with an estimated population in 1919 of 55,000. This city suffered severely in the explosion of 1917 when over sixteen hundred lives were lost and a portion of the city destroyed.

## II. EPIDEMICS OF FORMER DAYS.

Cholera. Although during the second pandemic of this disease cases were brought to Quebec by Irish immigrants (1832) the first record of Cholera in Nova Scotia is that mentioned by Hirsch of cases in Halifax in 1834.[1] During the fourth pandemic in 1866 the disease took firm hold in three points in North America, Halifax, New York and New Orleans.[2] The importation into Nova Scotia was through a vessel from Liverpool bound for New York which was obliged to make for Halifax owing to an outbreak of cholera among its passengers and crew. The number of cases among the residents of the port is said to have been small and in all "direct or indirect communication with the vessel could be traced." The disease gained no further ground in Nova Scotia.[3] Again in 1871 the disease was brought to Halifax by a ship with German immigrants. Only a few cases developed in the town.[4]

Typhus Fever. Hirsch (Vol. 1. pages 572-3) states that "the proper era of Typhus for the United States and Canada begins with the period when emigration from Ireland set in on a large scale.....in many cases the disease was confined exclusively to immigrants, in others it spread among the population of the seaports, particularly in the filthy and crowded quarters but without ever attaining the dimensions of a great epidemic. From Halifax Nova Scotia...there is an account of importation of Typhus by Irish immigrants in 1827, and of the

sickness spreading among the inhabitants of the town itself."

At Grosse Isle Quebec there is a monument with an inscription telling the story of how in the years 1847-48 typhus caused the death of five thousand four hundred immigrants. Similarly the official records at Partridge Island Quarantine Station, New Brunswick show that eighteen hundred deaths occurred and during that period one thousand immigrants died at Halifax from the disease.

Yellow Fever. In the year 1861 (July-September) cases of yellow fever occurred amongst the crew of a vessel after arrival. These cases were reported by Slayter.[5] No doubt the vessel had carried stegomyia and had numerous breeding places on board.

Influenza is recorded [6] as having appeared in Nova Scotia in 1789. In 1873 the disease was universally epidemic in North America but there is no information at hand regarding this portion of Canada, nor, owing to the lack of vital statistics, is there any record at hand as to the extent to which the province suffered in 1889-92.

Diphtheria appeared apparently for the first time in some small fishing villages between the years 1860 and 1870. An interesting document written by a medical man, a graduate of Edinburgh University, unfortunately undated, but which describes several small epidemics, recently came into the possession of the provincial health officer.

Cerebro-spinal Meningitis and Anterior Poliomyelitis are also endemic in the province. The former disease is a more important cause of death than typhoid or scarlet fever. I am unable to find any record of the introduction of these diseases. Certainly in 1911 a small epidemic of poliomyelitis occurred in the mining towns of Cape Breton.

## III. Public Health Administration.

In Canada the powers of the provinces are enumerated under the British North America Act in contra distinction to the United States in which the National Government exercises only those powers granted by the constitution. There is a recently formed Federal Department of Health which is gradually assuming control of quarantine food and drugs and other matters not under the control of the provincial authorities. It is recognized that the function of such a department must be largely educational. The National Government has assisted the provinces recently by a grant of money to be used in combatting venereal disease but no grants for any other purpose have yet been made. The department of health is represented in the Federal parliament by a cabinet minister who also has other duties.

In Nova Scotia the Provincial Secretary, a cabinet(or rather executive council) elected official, acts as minister of Health. The department of the public health is under the charge of the provincial health officer who has an assistant who is an epidemologist, called the provincial inspector of health. There is also a lady superintendent of public health nurses who supervises the county health nurses. There is provision for the appointment of three full time district health officers but so far only one has been appointed. The province

is divided into three health districts and one of these officers will be placed in each. Their duties at first will be largely inspection of schools and school children in the rural districts, educational work of various kinds and investigation into any outbreak of infectious disease. There are also six part time medical officers employed throughout the province who have charge of the venereal diseases treatment centres.

The provincial laboratory is conducted by the professor of pathology at Dalhousie University, part of his salary being paid out of provincial funds. All the ordinary public health work including Wassermann reactions, is done free of charge.

Throughout the province public health matters are delegated by the legislature to county and town councils and these bodies in turn pass them on to their respective boards of health. In the rural sections decentralisation takes another step for each county councillor is ex officio chairman of his own little local board of health for the district which he represents. The city of Sydney has a practically whole time health officer who is an experienced general practitioner but without special public health training. The county of Cape Breton also has a whole time health officer, a general practitioner of the old school, without special training. With these exceptions and including Halifax each incorporated town and county has a part time health officer in general practice, who is paid about a hundred dollars a year.

The School boards of some of the towns have been active in health matters and have employed nurses and in two or three cases dental work for school children is being done.

The Vital Statistics Bureau of the province is not in the public health department but the official in charge co-operates with the provincial health officer. There are now available records of births and deaths for twelve years.

## IV. HUMANE INSTITUTIONS AND GAOLS.

### Institutions for the Care of the Poor and Insane.

These institutions throughout the province are conducted on the county system. Recently a survey of the whole problem has been made by a committee of the Canadian Mental Hygiene Association and many changes have been recommended. There is an institution for acute cases at Halifax which is well conducted and has three resident medical officers.

Prisons. Some of the gaols of the various counties and towns are medieval in character both in respect to their structure and sanitation. A central prison with a hospital attached is badly needed. At the present time venereal diseases amongst the inmates is especially inadequately treated.

Hospitals. There are many small hospitals throughout the province. The provincial hospital is at Halifax and is used as a teaching hospital by the medical school. Adjacent are the children's Hospital, the Hospital for Tuberculosis, the Salvation Army Maternity Hospital and the City Home, where there are many cases of a chronic nature. Both the Maternity the the Tuberculosis Hospitals have just been completed and considerable extension is being made to the Provincial institution. The Provincial Sanitorium at Kentville is a large and modern institution and has increased its capacity greatly in the last five years. It lacks, however, free beds and these are regarded as a great need.

## V. A SURVEY OF THE VITAL STATISTICS OF THE PROVINCE.

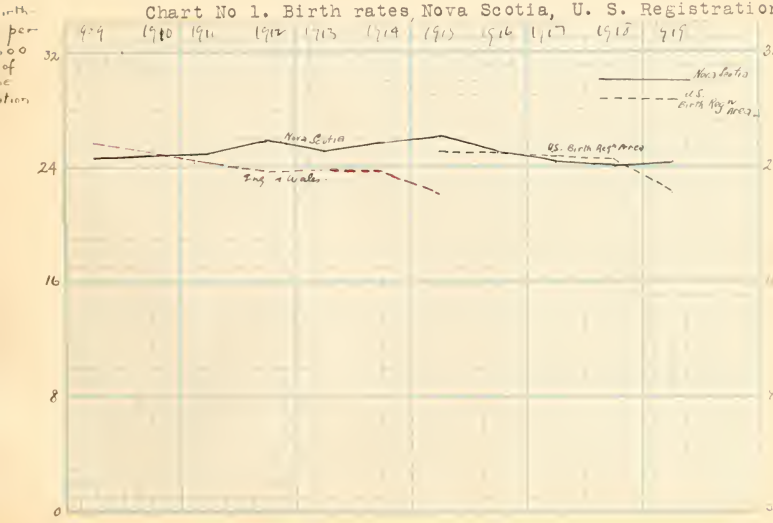
The birth and death rates for Nova Scotia as gathered from annual reports of the provincial health officer are given in Tables I and II below. As statistics for Canada are not available, I have made comparisons in the following table with such countries and cities, the statistics of which happened to be at hand.

Table I. THE BIRTH-RATES IN NOVA SCOTIA AND THE UNITED STATES REGISTRATION AREA.

| | 1909 | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 |
|---|---|---|---|---|---|---|---|---|
| Nova Scotia | 24.7 | 24.9 | 25.0 | 25.8 | 25.2 | 25.7 | 26.2 | 25.1 |
| U.S. Reg.Area. | | | | | | | 25.1 | 25.0 |

| | 1917 | 1918 | 1919 |
|---|---|---|---|
| Nova Scotia | 24.4 | 24.1 | 24.3 |
| U.S.Reg.Area | 24.7 | 24.6 | 22.3 |

Chart No 1. Birth rates Nova Scotia, U. S. Registration Area



The birth rate in Nova Scotia increased gradually to a maximum in 1915 and during the war there was an appreciable decline in the rate due no doubt to the absence of so many of the male population.

Table II The Death Rates from all causes.
NOVA SCOTIA and the U. S. REGISTRATION AREA
per 10,000 of the population.

Year.

| | 1909 | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cotia | 140 | 138 | 167 | 145 | 145 | 151 | 153 | 159 | 149 | 147 | 178 |
| .Reg.A | 142 | Average 142 (1906.10) | | 139 | 141 | 136 | 135 | 140 | 142 | 180 | xxx |

xxx In Nova Scotia the deaths are counted from October 1st o September 30th, hence the influenza deaths of 1918 appear under 1919 or Nova Scotia and under 1918 for the U. S. Registration Area. The eaths caused by the Halifax Explosion in 1917 are omitted from the cal- ulations.

The death rate in Nova Scotia averaged 149.4 per 10,000 f the population during the years 1909-18. The year 1919 which as tated includes all deaths from October 1st 1918 to September 30th 1919, hows an increase of 28.6 per 10,000 over this average. This increase hows then that the influenza epidemic caused 1471 deaths. There are 406 deaths recorded as due to influenza and there is an increase in e number credited to other respiratory diseases especially lobar neumonia. The extra mortality caused by the influenza epidemic in the . S. Registration Area over the average of the previous seven years as 40.7 per 10,000 of the population. This is shown diagramatically n Chart No. 3.

Chart No. 2. DEATH RATES ALL CAUSES

Nova Scotia and U. S. Registration Area.

1908 - 1918.

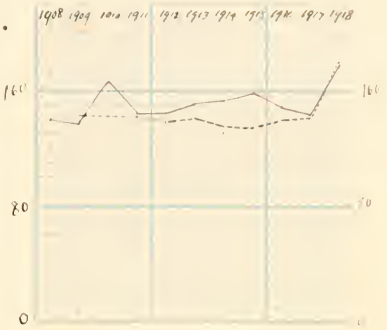
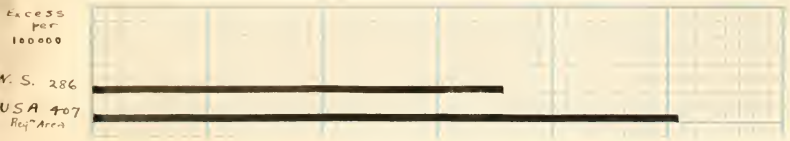



Chart No. 3. EXCESS MORTALITY DUE TO INFLUENZA 1918

NOVA SCOTIA AND U. S. REGISTRATION AREA.




N.B. The N. S. rates have been set back one year to indicate the influenza rise in the proper year.

The error in this case is that Nova Scotia's excess is probably slightly overstated as in the annual reports of the provincial health officer for 1918-1919 it is stated that of the 1406 deaths credited to influenza 1251 occurred in the last three months of 1918.

It is thus seen that in mortality this province suffered considerably less from influenza than did the registration area of the United States.

Typhoid Fever. Most of the incorporated towns have water supplies from impounded sources. There is no chlorinated municipal supply in the province.

Table III. TYPHOID FEVER MORTALITY RATES PER 100,000 of the POPULATION.
NOVA SCOTIA WITH ENGLAND AND WALES.

| | Year. | | | | |
|---|---|---|---|---|---|
| | 1914 | 1915 | 1916 | 1917 | 1918 |
| NOVA SCOTIA | 17 | 12 | 9 | 11 | 6 |
| England & Wales | 5 | 4 | 3 | 3 | 3 |

Chart No 4. DEATH RATES FROM TYPHOID FEVER.

NOVA SCOTIA AND ENGLAND AND WALES.

The seasonal distribution of the deaths from typhoid in Nova Scotia for the 10 year period ended September 30th 1918 were as follows:

Table IV NOVA SCOTIA

Deaths by months from Typhoid Fever (10 year period)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cases | 30 | 17 | 21 | 22 | 15 | 28 | 23 | 44 | 88 | 106 | 84 | 39 |
| Per Cent. | 5.8 | 3.3 | 4.1 | 4.3 | 2.9 | 5.4 | 4.5 | 8.5 | 17.0 | 20.5 | 16.2 | 7.5 |

The seasonal distribution is represented graphically on chart No. 7. The higher autumnal prevalence may possibly be accounted for by the rains of that season and the infection of wells and public water supplies.

URBAN AND RURAL TYPHOID DEATH RATES. After the forty incorporated towns of the province ranging from 55000 to 1200 are taken away, there remains a population of over three hundred thousand which certainly may be termed truly rural from an epidemiological standpoint.

The typhoid mortality death rates in each of these two groups is shown in chart No. 5.

Chart 5. TYPHOID DEATH RATES URBAN AND RURAL
NOVA SCOTIA 1914 - 18.

Chart 3. TYPHOID DEATH RATES URBAN AND RURAL NOVA SCOTIA - 1914 - 18.

The age distribution of the deaths from Typhoid show that 45.8 per cent were between the ages of fifteen and thirty. Between these ages one would expect 28 to 31 per cent of the population so the high death rate between these ages conforms with the usual incidence rate.

DIPHTHERIA, SCARLET FEVER AND CEREBRO-SPINAL FEVER.

On Chart No. 7 also are represented graphically the seasonal distribution of these three diseases over the same period of ten years.

The death rates for the quinquennial period 1914-18 are given in Table V.

Table V NOVA SCOTIA.

DEATH RATES FROM DIPHTHERIA, SCARLET FEVER AND CEREBRO-SPINAL MENINGITIS PERIOD 1914-18 per 100,000 of the POPULATION.

| | YEAR AND RATE PER 100,000. | | | | |
|---|---|---|---|---|---|
| | 1914 | 1915 | 1916 | 1917 | 1918. |
| Cause of Death | | | | | |
| Diphtheria | 23.5 | 21.6 | 19.6 | 26.3 | 23.8 |
| Cerebro spinal meningitis | 7.2 | 19.0 | 14.7 | 10.4 | 13.8 |
| Scarlet Fever | 5.6 | 2.9 | 1.9 | 1.3 | 0.9 |

The rate of table four are represented in chart No.6 To this has been added a red line indicating the deaths from Diphtheria in Pennsylvania during the same years.

Chart No. 6 DEATH RATES FROM DIPHTHERIA CEREBRO-SPINAL FEVER AND SCARLET FEVER. PERIOD 1914 - 1918. NOVA SCOTIA AND DIPHTHERIA PENNSYLVANIA 1914-1918.

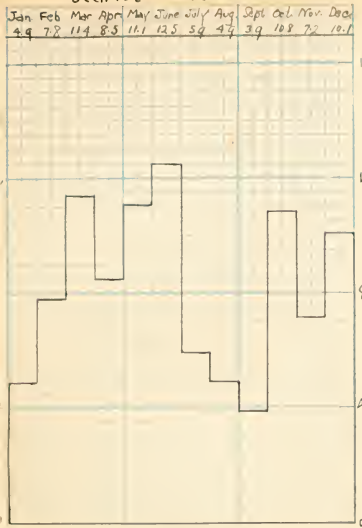
Chart No. 6 gives a pretty fair comparison of the mortality due to these three diseases as in the ten year period 1909 - 1918 58 per cent of the deaths from Scarlet fever, 46 per cent of the deaths from Diphtheria and 49 per cent of the deaths from Cerebro-Spinal Fever were amongst the population under five years of age.

The death rates from Diphtheria in Pennsylvania have been added to chart No. 6 for comparison (red).

THE RESPIRATORY INFECTIONS. Pulmonary Tuberculosis. The Pneumonias(including congestion of thelungs)and such infections as whooping cough and measles which may be classed in the same group cause a heavymortality in Nova Scotia.

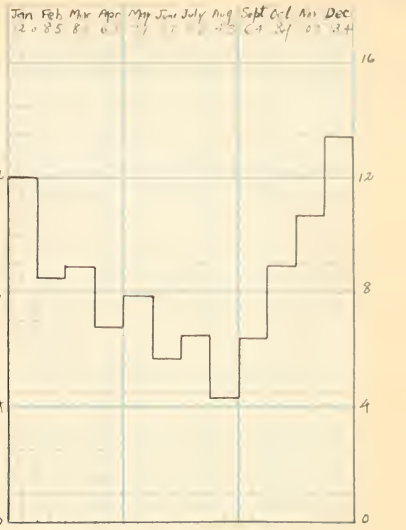
The great majority of the deaths from measles and from whooping cough occurred amongst the population under five years of age. In the case of whooping cough four hundred and

## Scarlet Fever

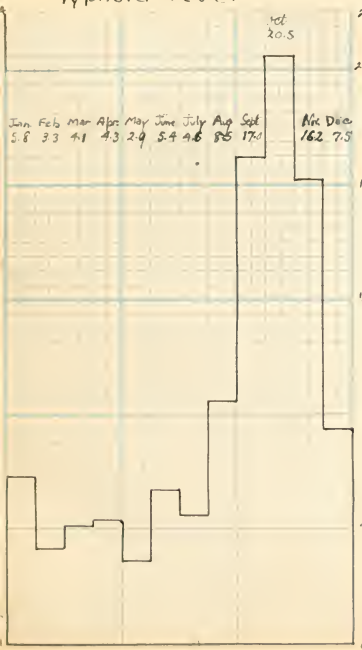



Per cent of total deaths

## Diphtheria




## Typhoid Fever



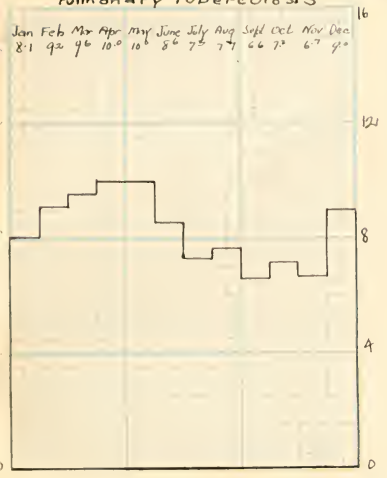

All for ten-year period 1909-18.

## Cerebro-Spinal Fever.

Chart No. 8. RESPIRATORY DISEASES.

Pulmonary Tuberculosis

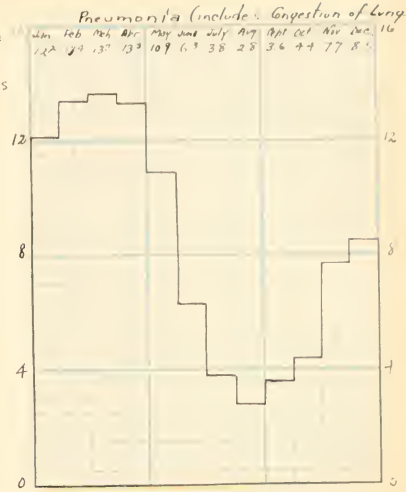
| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8·1 | 9·2 | 9·6 | 10·0 | 10·1 | 8·6 | 7·5 | 7·4 | 6·6 | 7·3 | 6·7 | 9·0 |




Per Cent of deaths

Pneumonia (include Congestion of Lungs)

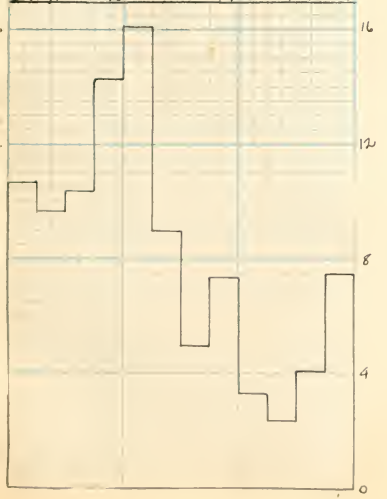
| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12·2 | 9·9 | 13·1 | 13·3 | 10·9 | 6·5 | 3·8 | 2·8 | 3·6 | 4·4 | 7·7 | 8·5 |




Deaths (per cent of total) in each month. 10 year period 1909 - 1918

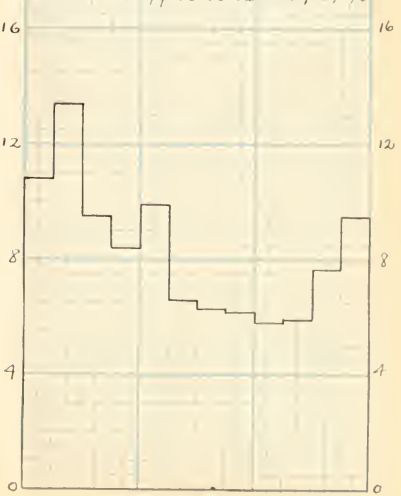
Measles.

| Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10·7 | 9·7 | 10·4 | 14·3 | 16·1 | 9·0 | 5·0 | 7·4 | 3·3 | 2·4 | 4·1 | 7·5 |




Whooping Cough.

| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10·8 | 3·4 | 0·5 | 2·4 | 9·7 | 6·6 | 6·3 | 6·2 | 5·8 | 7·7 | 7·7 | 9·5 |



fifty deaths out of a total of eight hundred and seventy four or fifty seven per cent occurred in infants under one year. 92.6 % of the whooping cough deaths are under five and 68 per cent of the measles deaths.

Fifty four per cent of the Pneumonia deaths and sixty nine per cent of the deaths from Pulmonary Tuberculosis were in the population of fifty years and under.

Chart No. 9 illustrates the death rates from measles and whooping cough and Chart No. 10 the deaths from Pulmonary Tuberculosis, and Pneumonia for the five years 1914 - 1918.

Chart No. 8 shows the seasonal distribution of the deaths from the four separate respiratory affections and chart No. 11 the distribution by months of the deaths from all four taken together for the ten year period 1909-1918.

Table VI Deaths from RESPIRATORY AFFECTIONS NOVA SCOTIA

| | Year and rate per 100,000. | | | | |
|---|---|---|---|---|---|
| | 1914 | 1915 | 1916 | 1917 | 1918 |
| Pulmonary Tuberculosis | 156 | 130 | 164 | 151 | 118 |
| Pneumonia (includes congestion of the lungs.) | 94 | 100 | 143 | 123 | 94 |
| Measles | 16 | 9 | 47 | 10 | 10 |
| Whooping cough. | 6 | 14 | 27 | 21 | 11 |

There is a noticeable rise in 1916 in the death rate from all the respiratory diseases. This is especially noticeable in the case of measles.

ART No. 9.

DEATH RATES FROM MEASLES AND WHOOPING COUGH

NOVA SCOTIA [illegible]
PER 100,000 OF POPULATION.

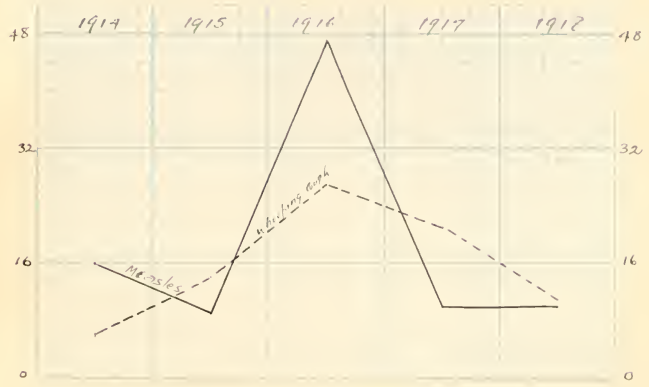
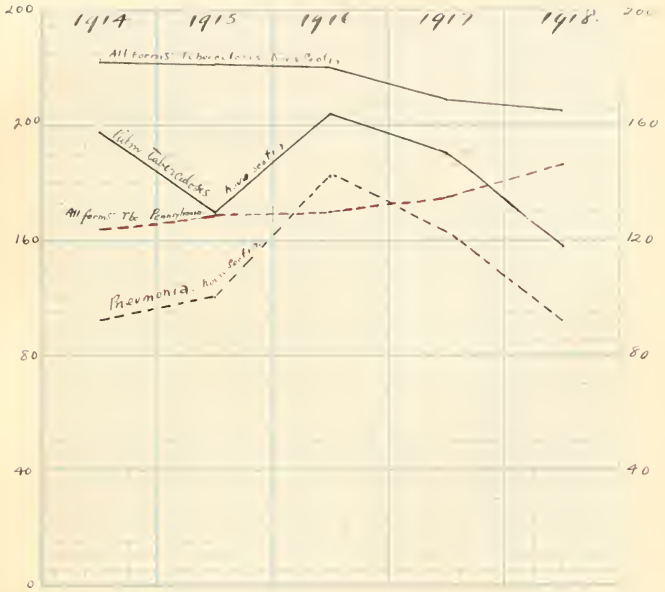


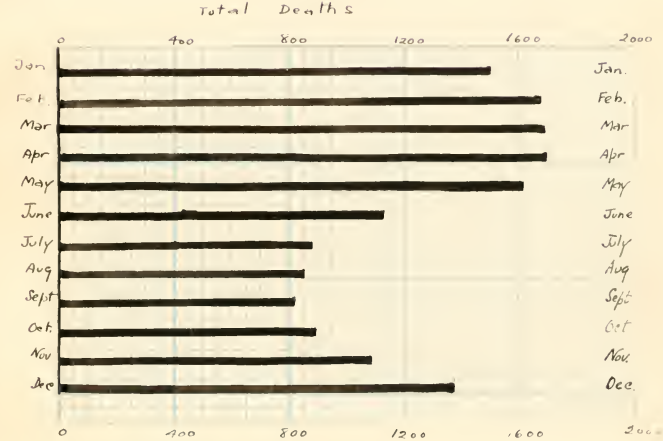
Chart No. 10 DEATH-RATES PULMONARY TUBERCULOSIS AND PNEUMONIA 1914- 1918 NOVA SCOTIA.




The Death-rates from "all forms" tuberculosis in Pennsylvania for the same years are shown by the broken red line.

CHART NO.11 - RESPIRATORY DISEASES.

TOTAL DEATHS IN EACH MONTH OVER WELL. RECORDED DATA
PNEUMONIA (INCLUDING CONGESTION OF THE LUNGS)
WHOOPING COUGH AND MEASLES DURING THE TEN
YEAR PERIOD 1909-1918.



Infantile Mortality. The deaths from Diarrhoea and Enteritis under two years vary widely in the rural and urban sections of the province.

Table IV. DIARRHOEA AND ENTERITIS (under 2 years) NOVA SCOTIA, PENNSYLVANIA AND NEW YORK CITY. DEATH RATES.

| | Year and rates per 100,000. | | | | |
|---|---|---|---|---|---|
| | 1914 | 1915 | 1916 | 1917 | 1918 |
| NOVA SCOTIA | 74 | 65 | 53 | 56 | 45 |
| PENNSYLVANIA | 95 | 91 | 103 | 94 | 96 |
| NEW YORK CITY. | 74 | 67 | 72 | 58 | 61 |

Unfortunately these rates do not afford an accurate comparison as the writer has not at hand the per cent of the population of Nova Scotia under two years of age. The birth rate, however, gives a rough estimate.

Table 4 is shown graphically on Chart 12.

Chart 12 DIARRHOEA AND ENTERITIS UNDER 2 YEARS.

Chart 12. DIARRHOEA AND ENTERTIS UNDER 2 Years.

Deaths from all causes under one year of age when compared with the live births are very high in certain sections of the province particularly the coal mining towns. These towns are largely unsewered, the percentage of foreign population is higher than elsewhere in the province.

Halifax the capital of the province had an average death-rate over two hundred per one thousand live births during ther period 1914 - 18. Sydney the next largest city an average rate of one hundred and eighty for the same period, and Glace Bay ranking third in size a rate two hundred and ten.

SMALLPOX OR ALASTRIM(?)

Following the Halifax explosion smallpox appeared in epidemic form and became widespread in Nova Scotia affecting New Brunswick and the United States. In the year 1918 - 1919 more than thirteen hundred cases were reported. In his report for this year the provincial health officer states that a small number proved fatal. In the next year there were over three hundred cases reported with no deaths.

THE QUESTION OF DIAGNOSIS, between the disease and Varicella need not be gone into. The opinion of the health officer may be given in his own words from the above mentioned report. "While the cases were commonly mild many were nevertheless quite typical and some were of the 'old fashioned' type which admitted no dispute of diagnosis. A small number proved fatal, some were responsible for permanent damage to sight or hearing and not a few disfigured

for life by the unsightly pitting." At the time of the arrival of the writer in Nova Scotia to engage in public health work, only a few cases were occurring sporadically. Unfortunately he had not the advantage of previous experience with a sufficient number of cases of smallpox to make his opinion of value but the exceedingly small mortality and the almost complete absence of prodromal symptoms made it appear that the disease was present in a very mild form. As the health officer further states "many,----- quite unsuspicious of the nature of the disease, have mingled freely with others -thus spreading infection". At the same time there were occasional cases in which the prodromal symptoms were those of smallpox and many in which the rash came out in a typical manner. Copeman [9] gives points of distinction between Smallpox and Alastrim and states that in the latter the eruption comes out in successive crops over a period extending over ten days or more. The writer saw a case in Sydney with the city health officer, in the summer of 1920 in which the eruption was fully developed in 48 hours. The patient however did not seem proportionately ill.

EFFECT OF VACCINATION. The health officer continues to say in his 1918 report that "the value of vaccination has been demonstrated over and over again in connection with our recent experience. In practically every case we have had the subject had not been vaccinated. In some instances every unvaccinated member of a family has been attacked while the vaccinated members escaped."

In a period of a year there were 1300 cases of smallpox in the unvaccinated and 15 cases amongst the vaccinated. There were performed during the year 24,542 vaccinations. Many thousands more are known to have been vaccinated but figures are not obtainable. This method of giving the figures sounds convincing but the information is not full enough to give a definitely good case for vaccination.

For example, if the midyear population be taken at 550,000 and the cases at 1300, there is an attack rate of two hundred and forty two per 100,000. Now if the midyear vaccinated population be taken at one half the number known to have been vaccinated during the year 12,250 and the cases amongst the vaccinated at fifteen there is an attack rate of one hundred and twenty two per 100,000. Of course this really is good evidence, as from personal knowledge many of the inhabitants were vaccinated at different periods from ten to twenty years ago.

Concerning the nature of the disease, perhaps Colonel Balfour's words regarding Alastrim might be applied, that it "seems to be smallpox mitigated by some undetermined factor or factors."

From an administrative point of view certainly any question whatever regarding the diagnosis would embarrass the health officer of the province and would not be justified in the light of our present knowledge.

(Huntingdon's Chorea.

An interesting condition a few cases of which have been reported in Nova Scotia by Doctor W. H. Hattie is Huntingdon's Chorea. Osler[8] stated that he had seen this disease in two Maryland families within a few years and that it seems common in the United States. The Nova Scotia cases were characteristic in their hereditary nature, the association with psychical troubles and late onset. They occurred in people of French descent living in the County of Colchester. These people are descendants of certain Huguenot families who on the revocation of the Edict of Nantes in 1685 , sought safety and religious freedom on the banks of the Rhine. An English agent, JohnDick, was busy securing colonists in this area for Nova Scotia and partly by his efforts the county of Lunenburg was settled with German people and a portion of the County of Colchester with French from this district.)

Seven cases of Epidemic Encephalitis occurred during the year 1919-1920, four of which were personally investigated by the writer. Two cases were fatal. The cases occurred in the winter months in widely separated districts. All cases were typical of the disease as it occurred in England in 1918. No association between cases could be traced. A large number of soldiers returned to their homes in the rural districts in the months preceding so these apparently isolated cases must be considered to have a possible connection with those in England by means of carriers or missed cases.

## VI. RECENT ADVANCES IN PUBLIC HEALTH.

By means of co-operation with the provincial branch of the Canadian Red Cross Society the provincial health officer has been able in the past two years to get a fair health program under way. This society assisted first by giving scholarships in Public Health Nursing to graduate nurses taking the required course at Dalhousie University, second by paying the salaries of a number of these nurses during their first year in the field and third by sending out two educational caravans throughout the province in the summer of 1920. These caravans are described below.

Six free treatment centres for venereal disease have been opened at different points in the province. Full equipment has been furnished and these have already done good work. The points where these centres were established are marked on the attached map in red (V.D.C.)

Six of the counties now have public health nurses at work, and county health centres are being organized in each. The work of these nurses is largely educational and this point is being continually stressed. They are to be home teachers of personal hygiene first and assist at the various clinics second.

It is thought that a great many of the children are improperly nourished. Data regarding the weights and health of the school children will soon be forthcoming. It is certain

that particularly in the fishing centres too little attention is paid to the diet and many of these people eat practically no vegetables and drink only small amounts of milk. This fact was very evident to the writer when touring the fishing villages of NorthernCape Breton with the Red Cross Caravan. An effort is being made there to impress upon the nurses the importance of fresh vegetables and milk in nutrition.

Inspection of rural schools.

An inspection of the sanitary condition of a large number of the schools in rural sections has been made by one of the Medical Officers. Almost without exception these buildings were found to be unsatisfactory. The provincial health officer says in the most recent report: "In but one of the rural schools was there evidence of an attempt at such a state of cleanliness which wouldbe considered satisfactory in the homes of the pupils."

Halifax.

In Halifax City a voluntary organization, the Massachusetts-Halifax Health Commission is working for a period of five years. So far no results of the work have been published but there is no question that this organization and its executive officer have stimulated public health work not only in Halifax but in the whole province.

## VII. The Red Cross Caravans - An Experiment in Public Health Education.

Travelling exhibits of various kinds have been and are used in the various fields of publichealth. Doctor W.. F. Snow, when State Health Officer of California, had a travelling exhibit which went through the state by rail. So the idea of sending out such an exhibit through the rural sections only becomes an ambitious one perhapsin a country where it is necessary to travel by road and where the said roads leave much to be desired.

The Nova Scotia Red Cross Society organized, equipped, paid for and operated during the summer of 1920 two separate caravans which toured the provinces for forty-eight days in accordance with a prearranged and widely advertised itinerary which allowed for the performance of clinical work at forty-five points (villages and small towns) and for the holding of additional meetings in the larger centres between clinics and on week-ends.

Staff.

A medical officer with field experience in the army was in charge of each caravan. A nose and throat specialist, a specialist in diseases of the chest and a dental surgeon made up the basic medical staff. This was augmented at various points by the provincial health officer or one of his staff and by an anesthetist. One caravanal had an experienced

orthopaedist, and for a portion of the time a French speaking medical man.

The nursing sisters were taken from those taking the public health course at Dalhousie University. Two to four were with each caravan.

A press correspondent attended to local publicity.

A medical student volunteer acted as dispenser and operating room attendant and was invaluable as were also the Boy Scouts who joined and were relieved at different points along the route.

Drivers of each vehicle, the moving picture operator, and the mechanician all for the most part volunteers, made up the party.

Vehicles.

One touring car, three large motor ambulances and a Ford truck, fitted with the electric lighting plant, were alloted to each caravan. The majority of these cars were loaned by the New York Red Cross, the Rhode Island State Department of Health, the Canadian Militia Department and the Department of Civil Re-Establishment and by private individuals. The others were purchased outright by the Red Cross Society.

Route 1 Red Cross Caravan.

Route 2

The work of each caravan was divided into sections as follows:

1. Educational.

A. Moving-Pictures. At least one moving picture performance was given at each stopping place. Eachcaravan having a Ford carrying a Delco electric lighting plant, a moving-picture machine and about 15000 ft. of the best films available. These included films on farm sanitation, tuberculosis, dental hygiene, public health nursing and several others and always included a comedy. There is no doubt that these moving pictures contributed largely to the success of the meetings. In many of the rural districts they had never been shown beforeand the electric lights seemed a marvel to some of the country folk.

B. Exhibitsof Cards illustrating various subjects of Hygiene were put up in or near the centre of the days activity. On one of the most successful days these cards were tacked on the outside of the shops along the main street of the village and the officer in charge of the caravan went from poster to poster explaining the various items to interested groups. The principal exhibits were furnished by theCanadian National Tuberculosis Association and by the Canadian Oral Prophylactic Association.

C. Lectures were given at every stopping place, additional speakers being sent to each caravanto assist at the weekends. To illustrate the work of one Sunday, twenty-two

lectures were given in one day in one county, the churches or halls of every denomination being utilized. The clergy co-operated in the heartiest possible manner

D. Work with Groups. The Provincial Health Officer or one of his deputies endeavored in each locality to get the local boards of health together as the caravans were passing through in order that the plans of his department regarding the establishment of County Health Centres might be furthered. He also endeavored to get the local school boards to meet to take up the question of the sanitary condition of the school-houses.

E. Work with individuals.

Members of the caravanstaff utilized their spare time in visiting the farms of the neighbornood pointing out any defects in the sanitary surroundings and indicating how these might be remedied. These suggestions were very well received and in some cases at least acted upon.

2. The Clinical Work.

A. Operative work on Diseased Tonsils and Adenoids.

A preliminary meeting was held on arrival and the nose and throat specialist gave detailed instructions as to the preparation of all children who were to be brought up the following day. He frequently examined and picked out at this meeting the cases for operation on the following day. On arrival also the director of the caravan and the throat specialist selected the most suitable building for the operating work and the nurses, boy scouts, and dispenser quickly made the necessary preparations with the assistance of local ladies

of the Red Cross Society. Volunteer trained nurses were enlisted at various points. Laundry was shipped on in advance to the nearest rail point from Halifax.

B. The Tuberculosis Clinic was daily overcrowded. A great many who came were in the advanced stages of Phthisis but many others were incipient or moderately advanced. Arrangements were made to get these promptly into the provincial sanitorium at Kentville.

C. An Orthopedic surgeon was with one of the caravans and at his clinics remediable defects were found in some cases.

D. A great many general consultations were held for the benefit of the local physicians. One country physician referred thirty or more cases for examination and report.

E. The dental clinics were so arranged that only young children were treated. Even limiting the age to those under ten gave one dental surgeon much more than he could do. A great many parents were simply informed of the nature of the defect and they promised to take the children to the nearest dentist. This policy had to be followed frequently also in the nose and throat clinics.

The summary of work done is as follows:

Thirty-six clinics at different places, during the seven weeks, resulted in having over four thousand patients examined, three hundred and ninety children operated on for tonsils and adenoids, eight hundred and sixty special examinations of the chest and eighteen hundred dental cases

attended.

One hundred and five meetings were held at nearly all of which moving pictures were shown and three hundred addresses were given. Among the special speakers were Doctor George E. Vincent, President of the Rockefeller Foundation, Professor Fitzgerald of Toronto University and many others well known in the field of public health. It is estimated and probably moderately, that fifty thousand persons heard the lectures delivered by members of the caravan staff or by the special speakers. Every newspaper in the provinceconducted a certain amount of publicity on behalf of the work and many reproduced cuts and special articles.

Cost. The total cost of both caravans was just under thirty thousand dollars and when it is considered that the Red Cross Society is contributing twenty-five thousand dollars towards the salaries of the publichealth nurses for the first year, the extent of its support will be realized. The total government appropriation for the provincial department of health is less than twenty-fivethousand dollars annually.

Every attempt was made to discourage over-statement and exaggeration in the lectures and general work of the caravans. Nothing sensational was attempted. It was hoped to gain the confidence not merely of the public but of the medical profession. One medical man who had expressed his disapproval of the scheme acted as chairman and made a warm speech in favor of the work.

## VIII. Conclusion.

Of course it is not possible to measure the result of such an effort as this and certainly viewed as an isolated effort it would be considered money not well spent. But when looked upon as part of the continued program of the health department and of the Red Cross it must be considered in a different light. Already it has helped in the writer's opinion to get the nurses established in their counties. It remains to be seen how much it will assist the Red Cross Society in its drive for funds now under way. It is perhaps possible that the great amount of information gained by the staff of the health department on the trip will be of use to them in their work.

Regarding the general public health work more careful studies are needed particularly on the causes of the high mortality amongst infants and from tuberculosis.

The administrative policy of providing expert services would seem to be the proper one if it is out carried far enough. It is difficult to understand how dental and throat services can reach these isolated districts save through centres provided by the government. The county health centres may yet prove the solution of this problem. It is possible that these centres which under the Public Health Act of the Province mustbe established by the counties would be hastened if one county could be induced to commence an almost model one largely at its own expense. There is a

certain amount of rivalry between counties and it would do no harm to stimulate it slightly. Such assistance as should be given should be in expert services : that is the provincial government should provide specialists of various kinds to visit the centre periodically but not to do the routine work, save in the isolated sections. Whether or not the federal government should contribute financially to such centres is a moot question. Certainly in Canada the day when it will do so does not yet seem at hand, although the grant of money for the prevention of Venereal diseases would seem to create a precedent which might readily be followed by "grants in aid" of other branches of preventive medicine.

There is no opportunity in Nova Scotia for doing what Bunyan would call "great and desperate cures" but there would seem to be a field with a fine promise of ultimate success.

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